



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of

YAMAZAKI et al.

Application Number: 10/576,877

Filed: April 21, 2006

For: HIGHLY MOISTURE PROOF FILM AND METHOD
OF MANUFACTURING THE SAME

ATTORNEY DOCKET NO. NAGA.0003

Art Unit 1794

Examiner:
Ahmed, Sheeba

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF ONE SKILLED IN THE ART
UNDER 37 C.F.R. § 1.132

Sir:

I, Hideaki Tenda, am the inventor of the above identified application, and hereby declare as follows:

I have reviewed the above-referenced patent application and carefully considered the Examiner's rejections based upon Ohba et al. (US 6,605,344) and Rickert, Jr. (US 4,163,702). It is my conclusion that the invention achieved the "unexpected results" of excellent oxygen-gas barrier properties and moisture proofness ([0057] – [0058] of the corresponding US Pub. No. 20070134507. The "unexpected results" are achieved only via the present invention but not via Ohba or Rickert due to the following reasons.

Ohba's gas-barrier film is obtained by applying a metallic-compound-containing layer to the surface of a polymer layer formed from a mixture of a poly(meth) acrylic acid polymer and a polyalcohol. In Ohba's gas-barrier film, ionic bonds are formed by a cross-linking reaction of a carboxyl group of the poly(meth)acrylic acid polymer and a polyvalent metal in the metallic-compound between the polymer layer and metallic-compound-containing layer. Further, in Ohba's gas-barrier film, the polyvalent metal is not contained in the polymer layer before the cross-linking reaction.

Rickert discloses a process wherein the surfaces of articles of manufacture fabricated from aluminum and other material (which are not permanently water wettable) are rendered permanently water wettable by coating the surface with a continuous film of an acidic film forming polymer (formed of water soluble salts). The producing steps include providing the

film containing a curing agent for the polymer; contacting the polymer film under aqueous conditions with colloidal alumina or a polyvalent metal salts; and curing the polymer to water insolubility. In Rickert's process, ionic bonds are formed by a cross-linking reaction of a carboxyl group of the acidic polymer and the polyvalent metal. Further, in Rickert's process, the polyvalent metal is not contained in the acidic polymer before contacting the polymer film under aqueous conditions with colloidal alumina or the polyvalent metal salts.

As such, in the films disclosed by Ohba and Rickert, the cross-linking reaction is a neutralization reaction between an acid and a base, the amount of the polyvalent metal relative to all the carboxyl groups contained in the polymer is not in a range of 1 to 5 chemical equivalents.

In contrast, in the film of the present invention, the multivalent metal compound (B) is present in an amount which is in a range of 1 to 5 chemical equivalents relative to all the carboxyl groups contained in the polycarboxylate-based polymer (A).

In the film of the present invention, since it is difficult to obtain uniform solution in order that the polycarboxylate-based polymer and the multivalent metal may react easily in solution, the solution (coating liquid) according to the present invention is obtained by mixing the polycarboxylate-based polymer (A), the multivalent metal compound (B) and one of a volatile base (C) and an acid (D) with water which is used as a solvent. Ohba and Rickert are simply silent that a coating liquid for forming the polymer layer is obtained by mixing the polycarboxylate-based polymer and the multivalent metal compound.

As apparent from the measuring results of a WVTR and an O₂TR of the film obtained in Example 1 ([0096]-[0098]) and of the film obtained in Example 2 ([0099]-[0101]), the film obtained according to the present invention by coating with a coating liquid including the polycarboxylate-based polymer (A) and the multivalent metal compound (B) and treating with heat under predetermined conditions, has an amount which is in a range of 1 to 5 chemical equivalents relative to all the carboxyl groups contained in the polycarboxylate-based polymer (A), as well as excellent oxygen-gas barrier properties and moisture proofness. Thus above-mentioned effects achieved only by the present invention but not by Ohba and Rickert.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statement were made with the knowledge that willful false statements and the like so made are punishable by fine, or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code, and that such willful false statements may jeopardize the validity of the above-captioned application and any patent to issue thereon.

Respectfully submitted this 4th day of September, 2008

Hideaki Tanaka